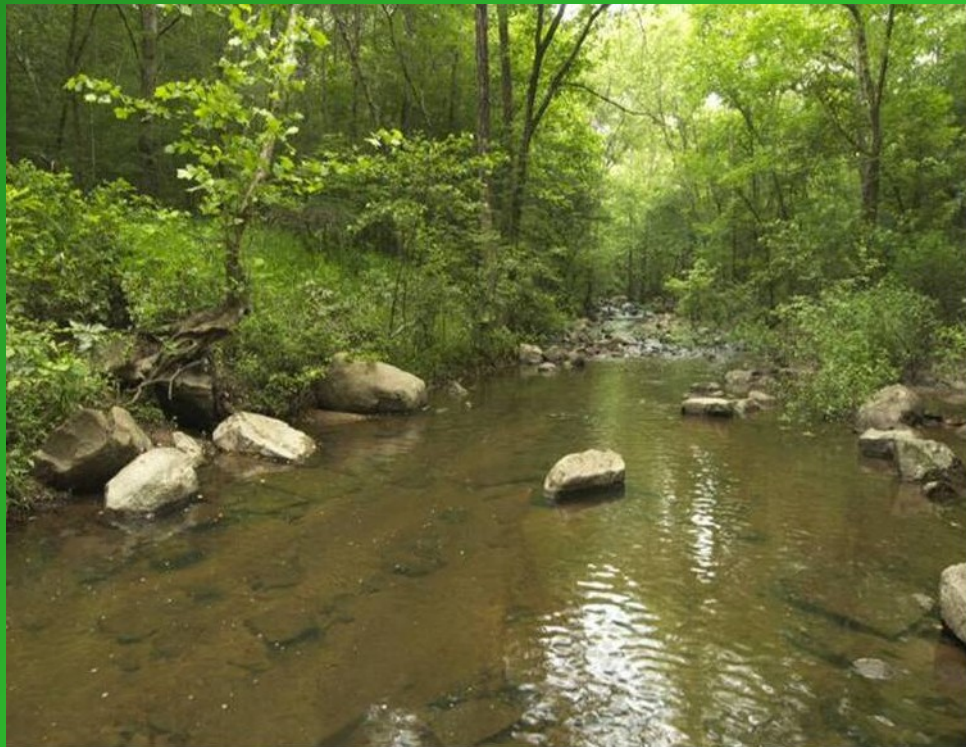




MDC Resource Science

Reforestation Riparian Corridors in the Ozarks: Species Selection and Vegetation Management

Science Notes



Reforesting Riparian Corridors in the Ozarks: Species Selection and Vegetation Management



By Kyle Steele, Randy Jensen, and John Kabrick

Goal: Determine the effect of five vegetation treatments on the survival and growth of thirteen species of bare-root seedlings planted along Ozark riparian corridors.

Summary

Many land managers are in the process of reforesting riparian corridors, often with poor or mixed results. We designed an experiment to examine artificial hardwood regeneration of thirteen species in old-field riparian corridors of the Missouri Ozarks (Table 1) using five vegetation treatments replicated at three sites. All treatments were initially treated with Roundup® as a site preparation method. Treatments included: 1) Roundup® site preparation only; 2) a single, first growing season application of grass-selective, post-emergent herbicide Poast Plus®; 3) redtop grass cover-crop; 4) white clover cover-crop; and 5) Virginia wild rye (a native species) cover-crop.

Table 1. Tree species included in this study (N=4,500).

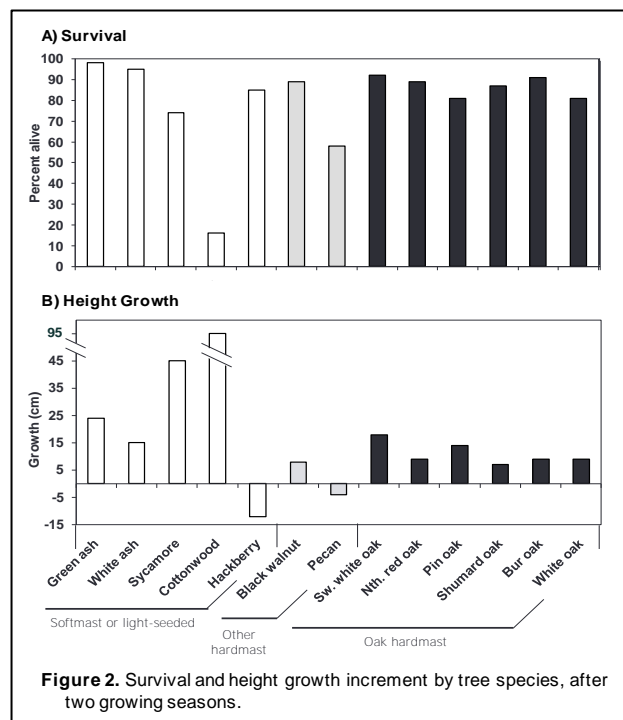
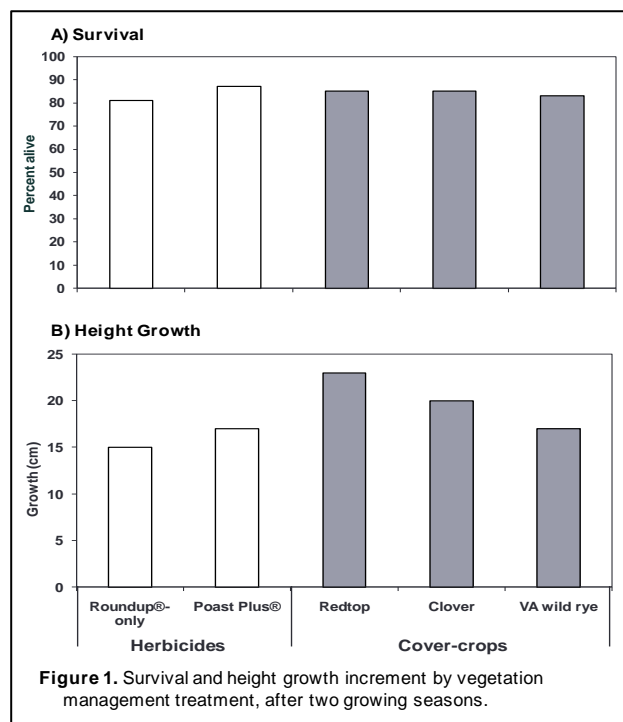
Species Group	Common Name
Light-seeded or softmast	Green ash
	White ash
	Sycamore
	Cottonwood
	Hackberry
Oak hardmast	Bur oak
	Sw. white oak
	White oak
	Nth. red oak
	Pin oak
Other hardmast	Shumard oak
	Pecan
	Black walnut

Results

After two growing seasons, planted seedling survival was 84% across all treatments. Survival was similar among treatments, and ranged from 81% in the Roundup® only treatment to 87% in the Poast Plus® treatment (Figure 1A). However, there were large differences in survival rates among species (Figure 2A). Green ash, white ash, swamp white oak, bur oak, northern red oak, and black walnut had the best survival, all above 90%. Cottonwood (16%) had the worst survival, followed by pecan (58%) and sycamore (74%). For seedling height growth increment, the cover-crop treatments were more effective than the herbicide-only treatments, with redtop having the highest average growth (Figure 1B). There were substantial differences in height growth by species (Figure 2B). When cottonwood did survive, it grew to nearly a meter tall after two years, followed by sycamore (45 cm), green ash (24 cm), and swamp white oak (18 cm). Hackberry (-12 cm) and pecan (-4 cm) each had a negative growth values due to shoot dieback.

Management Implications

Overall, if planting trees into a perennial cover-crop coincides with management objectives, redtop grass has proven to be an effective option. If not, using follow-up herbicide applications of chemicals that can be safely applied over trees, such as Poast Plus®, can help remove additional noxious vegetation, (e.g., Johnson grass and tall fescue). However, the overriding factor affecting success appears to be the selection of tree species. Species like green ash, sycamore, swamp white oak, and pin oak had high survival and growth under difficult Ozark growing conditions and are easier to establish, while pecan, hackberry, and cottonwood are difficult to establish.



For more information, contact:

Missouri Department of Conservation
Resource Science Center
1110 S. College Avenue
Columbia, MO 65201
(573)882-9909 ext. 3263
Kyle.Steele@mdc.mo.gov

Keywords: riparian reforestation, Ozark Highlands, artificial regeneration, seedlings, cover-crops, bottomland forest restoration